

***Asplenium ruta-muraria* L. in Iowa.**—A small population of *Asplenium ruta-muraria* L., a species previously unrecorded from Iowa (Eilers, L. J. & D. M. Roosa. 1994. *The Vascular Plants of Iowa*. University of Iowa Press, Iowa City; Peck, J. H. 1982. Ferns and fern allies of the Driftless Area of Illinois, Iowa, Minnesota and Wisconsin. Milwaukee Public Mus. Contr. Biol. Geol. 53:1–140; Peck, J. H. 1989. Additions to the Iowa Pteridophyte Flora, III. J. Iowa Acad. Sci. 96:54–56), was recently discovered by the first author in Clinton County in the east-central part of the state. This locality is some 300 miles north of its nearest known location in the Missouri Ozarks (Wagner, Jr., W. H., R. C. Moran and C. R. Werth. 1993. Aspleniaceae Newman. Pp 228–245 in FNA Editorial Committee. *Flora of North America North of Mexico. Vol. 2 Pteridophytes and Gymnosperms*. Oxford Univ. Press, New York; Yatskievych, G. 1999. *Steiermark's Flora of Missouri, Vol 1. Revised edition*. Missouri Botanical Garden Press, St. Louis.). Since the Iowa population is small (> 50 plants), only portions of a few plants were collected and these were deposited in the University of Iowa Herbarium (Clinton Co., Iowa: *T. F. Cady s.n.*, May 18, 2001, IA).

Primarily an Appalachian species in North America (Fig. 1), the main range of *A. ruta-muraria* is from southeastern Ontario, south-central Quebec, New York, Vermont, New Hampshire and Massachusetts southwest into Kentucky, Tennessee, Georgia and Alabama (Wagner, *et al.*, 1993; Monro, D. 1988. A disjunct station of *Asplenium ruta-muraria*, with *Pellaea atropurpurea* and *P. glabella*, in Eastern Ontario. *Amer. Fern J.* 78:136–138). Additionally, there are a number of disjunct populations. The most extensive of these are in the Ozarks in southeastern Missouri (Yatskievych, 1999) and along the Niagara Escarpment in Lake Huron. In the nineteenth century, the Ozark population was reported to extend into adjacent Arkansas, but no specimens or extant populations are known (Taylor, W. C. 1984. *Arkansas Ferns and Fern Allies*. Milwaukee Public Museum, Milwaukee). The Ozark population also may have reached into Illinois. Mohlenbrock (Mohlenbrock, R. H. 1999. *The Illustrated Flora of Illinois. Ferns. Second Edition*. Southern Illinois University Press, Carbondale) reported that *A. ruta-muraria* was collected from an unspecified location in southern Illinois in the mid 1800's, but it is now presumed extirpated from the state. The Niagara Escarpment populations in southwestern Ontario extend through the Bruce Peninsula and Manitoulin Island to Drummond Island in Michigan's Upper Peninsula (Monro, 1988; Drife, D. C. & J. E. Drife. 1990. Oliver A. Farwell's early Pteridophyte records from the Keweenaw Peninsula. *Michigan. Bot.* 29:90–91; Gart Bishop pers. com.). An additional Michigan population previously reported from Keweenaw County (Monro, 1988; Wagner *et al.*, 1993) is discounted (Drife & Drife, 1990). Another remarkable disjunction was recorded recently by Gart Bishop and Bruce Bagnell from New Brunswick at Kennebecasis Bay, Kings County (Sheppard, M. 2001. In awe of minister's face, trust buys rare plant habitat. *Refuge* 11(2):1; Gart Bishop, pers. com.). The Iowa population augments the picture of a species characterized by widespread disjunctions well outside the core Appalachian range.

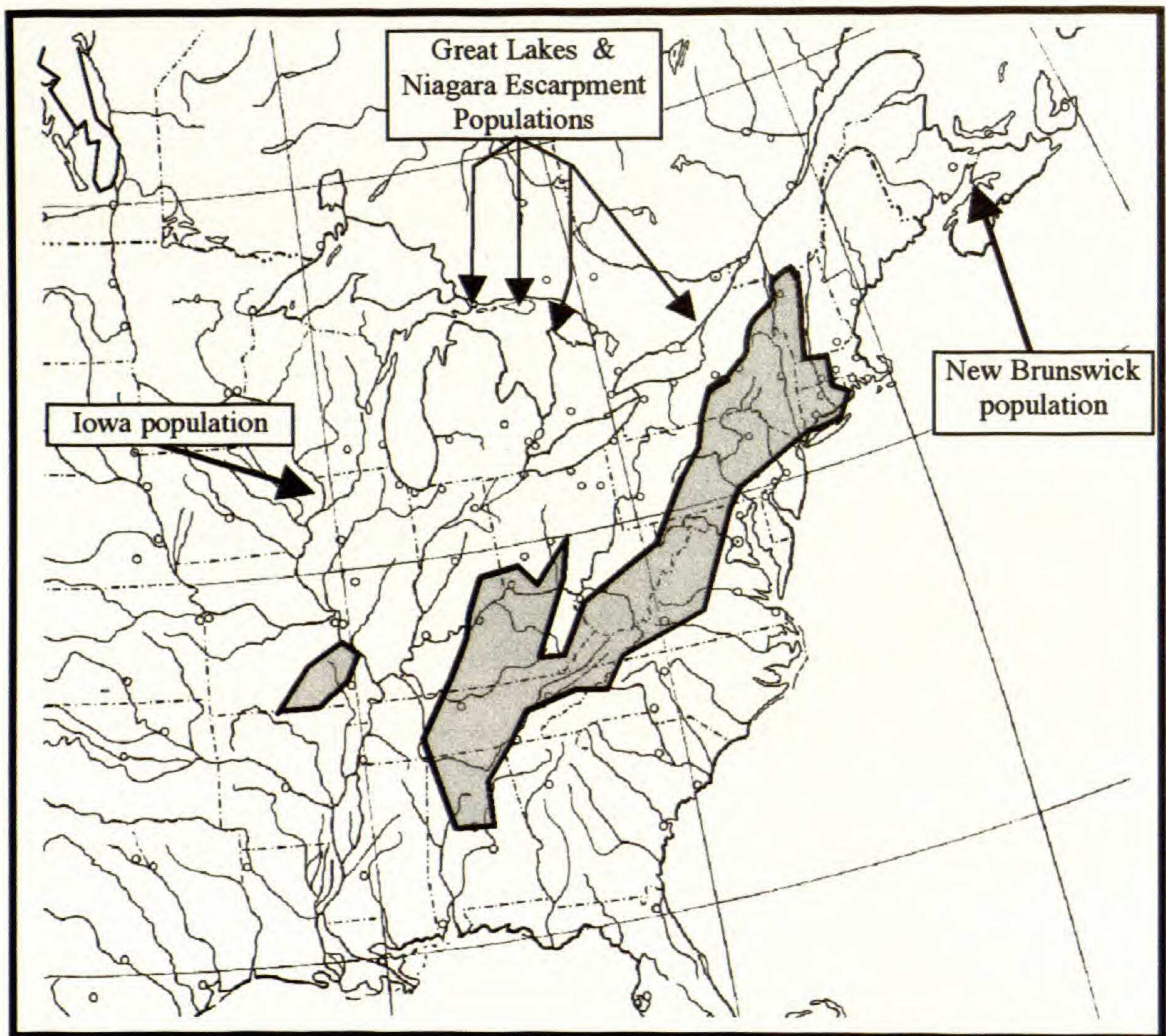


FIG. 1. North American distribution of *Asplenium ruta-muraria*, including the newly discovered Iowa population. Map based on sources cited in text.

The Iowa population of *A. ruta-muraria* occurs along the edge of a dolomite prairie characterized by *Schizachyrium scoparium* (Michx.) Nash (little bluestem), *Bouteloua curtipendula* (Michx.) Torrey (sideoats grama), *Sporobolus heterolepis* (Gray) Gray (prairie dropseed), *Carex richardsonii* R. Br., *C. umbellata* Schkuhr ex Willd., *Liatris cylindrica* Michx. (blazing star), *Arabis lyrata* L. (rockcress), *Dalea purpurea* Vent. (prairie clover), *Aster sericeus* Vent and *A. azureus* Lindley, to name but a few. The southern and western perimeters of this prairie are defined by dolomitic outcrops; *A. ruta-muraria* occurs near the southeastern edge on small cliffs approximately 2.5–3.5 meters high. Although there has been some minor woody encroachment in recent history, these bluffs were historically surrounded by prairie, based on descriptions in the General Land Office Survey of 1837 (General Land Office Survey Field Notes, Iowa City, IA, State Historical Society of Iowa). The main population occurs on a section line, so the surveyor, John Wharry, would have walked right through this site and his notes recorded no trees or shrubs, only

“Broken along the line 2<sup>nd</sup> rate Land generally, Lime stone rock along the ravines”.

The largest concentration of *A. ruta-muraria* at this site occurs in a small, exposed area at the eastern terminus of a south-facing outcrop. On the south and east facing bluffs, *A. ruta-muraria* grows with the dominant fern encountered on these outcrops, *Pellaea glabella* Mett. ex Kuhn (smooth cliff-brake), whereas on the small, sheltered northern face it occurs with *Cystopteris bulbifera* (L.) Bernh. (bulblet fern). Other plant species co-inhabiting the shelves and crevices of these bluffs include *Arabis lyrata* (rock cress), *Euphorbia maculata* L. (spurge), *Minuartia michauxii* (Fern.) Farw. (= *Arenaria stricta* Michx.; rock sandwort), *Nepeta cataria* L. (catnip), *Parietaria pensylvanica* Muhl. ex Willd. (pellitory), *Aquilegia canadensis* L. (columbine), *Sporobolus neglectus* Nash (small rush grass) and *Schizachyrium scoparium* (little bluestem).

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**Vitexin 7-*O*-rhamnoside, a New Flavonoid from *Pteris vittata*.**—Previous work on the flavonoids of *Pteris vittata* L. has led to the identification of luteolinidin 5-*O*-glucoside by Harborne (Phytochemistry 5:589–600, 1966); in addition acid hydrolysis of extracts of this fern has led to the identification of kaempferol, quercetin, leucocyanidin and leucodelphinidin by Voirin (Ph. D. thesis, University of Lyon, p. 151, 1970). More recently 3-*C*-(6'''-acetyl-β-cellobiosyl)-apigenin (Amer. Fern J. 89:217–220, 1999) and 6-*C*-β-cellobiosyl-isoscutellarein-8-methyl ether together with quercetin 3-*O*-glucuronide and rutin (Amer. Fern J. 90:42–45, 2000) have been identified by Imperato and Telesca. In addition three kaempferol glycosides (3-*O*-glucoside, 3-*O*-glucuronide and 3-*O*-(X'',X''-di-protocatechuoyl)-glucuronide), two di-*C*-glycosylflavones (3,8-di-*C*-arabinosylluteolin and 6-*C*-arabinosyl-8-*C*-glucosylluteolin) and three flavonol glucosides acylated with hydroxycinnamic acids (kaempferol and quercetin 3-*O*-(2'', 3''-di-*O*-*p*-coumaroyl)-glucosides together with kaempferol 3-*O*-(X''-*O*-*p*-coumaroyl-X''-*O*-feruloyl)-glucoside) have been found by Imperato (Amer. Fern J. 90:141–144, 2000; Amer. Fern J. 92:244–246, 2002; Amer. Fern J. 93:157–160, 2004).

In the present paper two flavonoids (I and II) have been isolated from aerial parts of *Pteris vittata* L. collected in the Botanic Garden of the University of Naples. The fern was identified by Dr. R. Nazzaro (University of Naples); a voucher specimen (149.001.001.01) has been deposited in the Herbarium Neapolitanum (NAP) of the University of Naples.

Flavonoids (I and II) were isolated from an ethanolic extract of aerial parts of *Pteris vittata* by preparative paper chromatography in BAW (*n*-butanol-acetic acid-water, 4:1:5, upper phase), 15% HOAc (acetic acid) and BEW (*n*-butanol-